

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

August 26, 2005

TO: Internal File

THRU: D. Wayne Hedberg, Permit Supervisor

THRU: Joe Helfrich and Steve Fluke, Team Leads

FROM: Steve Fluke, Reclamation Hydrogeologist

RE: Addition of State Leases ML-47711 and ML-49287, West Ridge Resources, Inc.,
West Ridge Mine, C/007/0041, Task ID #2318

SUMMARY:

On March 22, 2005, The Division of Oil, Gas and Mining (the Division) received an application to add State Leases ML-47711 and ML-49287 to the Mining and Reclamation Plan (MRP) for West Ridge Resources, Inc. (West Ridge). The Lease areas add 1,682.34 acres to the existing approved permit area of 4,432.55 acres. No new surface disturbance is proposed as a result of the additional lease areas. The application has been submitted twice previously and reviewed by the Division with deficiencies (Task IDs #2187 and #2289). A third submittal was received by the Division on August 25, 2005 and has been assigned Task ID# 2318. This memo addresses the hydrology section of the application review.

Hydrologic information provided in the application meets the requirements of the Coal Mining Rules. The proposed amendment should be approved.

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TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The application meets the hydrology Environmental Description for Climatological Resource Information as provided in **R645-301-724.400**. The Division finds that these standards are met because information on climatic resources representative of the additional lease areas (State Leases ML-47711 and ML-49287) is presented in Chapters 2, 4, and 7 of the MRP.

Findings:

The information provided meets the minimum hydrology requirements of the Environmental Description for Climatological Resource Information of the State regulations.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and Analysis

The application meets the hydrology Environmental Description for Sampling and Analysis as provided in **R645-301-723**. The Division finds that these standards are met because, as stated on page 7-3, Sampling and Analysis, of the mine's existing MRP, "water quality sampling and analyses have been and will be conducted according to the "Standard Methods for the Examination of Water and Waste Water" or EPA methods listed in 40 CFR parts 136 and 434".

Probable Hydrologic Consequences Determination

The application meets the hydrology Environmental Description for Probable Hydrologic Consequences (PHC) Determination as provided in **R645-301-728**. The PHC was not initially updated to include the addition of State Leases ML-47711 and ML-49287 (Task ID# 2187). Observations from a site visit of the additional lease areas conducted on June 8 and 9, 2005 revealed that the two main watersheds located in the lease areas (Bear Canyon and Spring Canyon) appear to contain intermittent drainages and not ephemeral drainages as reported in the existing PHC. The intermittent status of these streams is based on observed flows at the time of the site visit and riparian vegetation supported along the stream channels. Although it had reportedly not rained in several days and no ice or snow was present in the watersheds at the time of the site visit, the Bear Canyon stream was flowing at approximately 30 gpm and the Spring Canyon stream was flowing at greater than 500 gpm (visual observations only). The Little Spring Canyon stream was also flowing at approximately 30 gpm at the time of the visit. In addition, the Bear Canyon and Spring Canyon watersheds are each greater than one square mile, which would qualify them as intermittent streams as defined in **R645-100-200**, Definitions, "Intermittent Streams".

The PHC has been updated to include a more detailed discussion on the hydrologic regime of Bear Canyon and the potential impacts of the proposed mining on the stream channel. In addition, the PHC includes a commitment for additional operational monitoring of Bear Canyon and baseline monitoring of Spring and Little Spring Canyons (Task ID #2289). At the request of the Division, the updated PHC information has also been edited to clarify minor points regarding conditions and potential impacts to Bear Canyon and to include the Bear Canyon and Spring Canyon monitoring schedules (Task ID #2318).

Groundwater Monitoring Plan

The application meets the hydrology Environmental Description for Groundwater Monitoring Plan as provided in **R645-301-724.100**. The groundwater monitoring plan has been updated to include additional sites for State Leases ML-47711 and ML-49287. According to Map 7-5, Seep/Spring Survey Map, seeps and springs identified as part of the October 1985 inventory within the additional lease areas include: four in Little Spring Canyon; three in Spring Canyon, seven in the Right Fork of Bear Canyon; and one in the Left Fork of Bear Canyon. More seeps and springs are scattered within these drainages adjacent to the permit area. No groundwater monitoring is ongoing within or adjacent to the additional lease areas with the exception of one spring in Hanging Rock Canyon (S-80) located southeast and adjacent to Little Spring Canyon. Baseline monitoring data was collected in 1985, 1986, 1988, and 1989 for a spring at the upper reaches of the Right Fork of Bear Canyon (S-22, SP-7) and the Left Fork of Bear Canyon (S-39, SP-5). An attempt to locate spring S-22 in the Right Fork of Bear Canyon during a site visit on June 9, 2005 was unsuccessful.

Following the initial review of the application (Task ID #2187), The Division recommended additional groundwater baseline monitoring in Spring Canyon and Little Spring

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Canyon, and additional operational monitoring in Bear Canyon. The Permittee has responded (Task ID #2289) with the addition of baseline monitoring of one spring in Spring Canyon (SP-102) and one spring in Little Spring Canyon (SP-101). The Division believes that these are good choices to represent groundwater conditions in these canyons because they appear to have good flow, access, and minimal cover (although the overburden is approximately 2,500 ft at the canyon bottoms). The PHC should be updated with the baseline data once established to aid in a more complete determination of probable impacts due to the mining and to make a finding on whether to include the springs for operational monitoring. Although there is a water right for Mels Spring in Bear Canyon (Water Right 91-4513), the spring could not be located in the spring of 2005 after two site visits. No other major springs are known in the right fork of Bear Canyon, therefore, no spring monitoring sites have been added to the monitoring plan for this canyon.

Table 7-1 has been updated to reflect that the new spring monitoring site (SP-101 and SP-102) will be monitored for baseline data (Task ID #2318).

Surface-Water Monitoring Plan

The application meets the hydrology Environmental Description for Surface-Water Monitoring Plan as provided in **R645-301-724.200**. The surface-water monitoring plan has been updated to include additional sites for State Leases ML-47711 and ML-49287. Following the initial review of the application (Task ID #2187), The Division recommended additional surface-water monitoring in Spring Canyon, Little Spring Canyon, and Bear Canyon. The Permittee has responded (Task ID #2289) with the addition of three new operational monitoring stations in Bear Canyon (ST-11, ST-12, and ST-13) and one baseline monitoring station for Spring Canyon Creek downstream of the confluence with Little Spring Canyon (ST-15). The existing monitoring station for Bear Canyon Creek (ST-4) has been replaced by station ST-13 located closer to the permit boundary. The PHC should be updated with the baseline data from ST-15 once established to aid in a more complete determination of probable impacts due to the mining and to make a finding on whether to include the stream for operational monitoring.

Table 7-1 has been updated to reflect that the monitoring schedules for ST-11 and ST-12, that monitoring site ST-15 will be monitored for baseline data, and that ST-4 has been replaced with ST-13 (Task ID #2318).

State Appropriated Water Rights

The application meets the hydrology Environmental Description for State Appropriated Water Rights as provided in **R645-301-724.100, -724.200**. The State Appropriated Water Rights for the existing permit area and for State Leases ML-47711 and ML-49287 are shown on Map 7-3, Water Rights, and appears to be accurate. The ownership, description, and usage of the water rights are summarized in Appendix 7-5 of the MRP. The only subsurface water right located in the additional lease areas is Mels Spring (Water Right 91-4513) located at the upper

reach of the Right Fork of Bear Canyon. This spring right is appropriated to the Utah School Institutional Trust and Lands Administration (SITLA) for use of stockwatering. There are three surface water rights appropriated within the additional lease areas. All three rights are appropriated to SITLA and include: Water Right 91-4682 is a tributary to Bear Canyon Creek located at the upper reach of the Right Fork of Bear Canyon Creek for use of stockwatering; Water Right 91-4682 includes the entire reach of the Right Fork of Bear Canyon to the east edge of Section 3 for use of stockwatering; and Water Right 91-4681 includes the Left Fork of Bear Canyon to the northwest boundary of the lease area. No surface water rights are known for Spring Canyon and Little Spring Canyon within the additional lease areas.

Findings:

The information provided meets the minimum hydrology requirements of the Hydrologic Resource Information of the State regulations.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Monitoring and Sampling Location Maps

The application meets the hydrology Maps, Plans, and Cross Sections of Resource Information for Monitoring and Sampling Location Maps as provided in **R645-301-722.300**. Additional surface-water and groundwater monitoring sites have been added for Spring Canyon, Little Spring Canyon, and Bear Canyon. Map 7-7, Operational Monitoring Locations, has been updated with the additional monitoring sites. Map 7-5, Seep/Spring Survey Map, Map 7-6, Hydrologic Monitoring Map (Historical Monitoring Locations), and Map 7-7, Operational Monitoring Locations, have all been updated to include the boundaries of the State Leases ML-47711 and ML-49287.

Subsurface Water Resource Maps

The application meets the hydrology Maps, Plans, and Cross Sections of Resource Information for Subsurface Water Resource Maps as provided in **R645-301-722.100**. The Division finds that these standards are met because, as described by Mayo and Associates (Appendix 7-1), ground-water systems in the permit and adjacent area have limited aerial and vertical extent due to the heterogeneous lithology of the rock units containing and overlying the coal-bearing strata, which are shown on Map 6-1A. The applicant asserts that no aquifers exist in the permit and adjacent areas so therefore no map has been prepared to show the location and

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extent of subsurface water. Ground-water resources are generally dismissed as inconsequential because there is no mappable aquifer, and potential impacts from mining treated as non-existent. As noted in previous findings by the Division of the West Ridge permit (March 3, 1999), such light dismissal is questionable. However, because this explanation for not mapping subsurface water resources was found by the Division to be adequate to meet the Coal Mining Rules during past permitting approvals for West Ridge, the logic should stand for the addition of the State Leases ML-47711 and ML-49287 because subsurface water resources remain the same for the additional areas.

Map 7-3, Water Rights, has been updated to include the additional State Leases ML-47711 and ML-49287.

Surface Water Resource Maps

The application meets the hydrology Maps, Plans, and Cross Sections of Resource Information for Surface Water Resource Maps as provided in **R645-301-722.200**. The Division finds that these standards are met because the location of surface-water bodies within and adjacent to the permit area is presented on Map 7-3, Water Rights. Map 7-3 has been updated to include the additional State Leases ML-47711 and ML-49287.

Well Maps

No oil, gas or water wells exist within the additional State Leases ML-47711 and ML-49287.

Findings:

The information provided meets the minimum hydrology requirements of the Maps, Plans, and Cross Sections of Resource Information of the State regulations.

OPERATION PLAN

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Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Groundwater Monitoring

The application meets the hydrology Environmental Description for Groundwater Monitoring Plan as provided in **R645-301-724.100**. The groundwater monitoring plan has been updated to include additional sites for State Leases ML-47711 and ML-49287. According to Map 7-5, Seep/Spring Survey Map, seeps and springs identified as part of the October 1985 inventory within the additional lease areas include: four in Little Spring Canyon; three in Spring Canyon, seven in the Right Fork of Bear Canyon; and one in the Left Fork of Bear Canyon. More seeps and springs are scattered within these drainages adjacent to the permit area. No groundwater monitoring is ongoing within or adjacent to the additional lease areas with the exception of one spring in Hanging Rock Canyon (S-80) located southeast and adjacent to Little Spring Canyon. Baseline monitoring data was collected in 1985, 1986, 1988, and 1989 for a spring at the upper reaches of the Right Fork of Bear Canyon (S-22, SP-7) and the Left Fork of Bear Canyon (S-39, SP-5). An attempt to locate spring S-22 in the Right Fork of Bear Canyon during a site visit on June 9, 2005 was unsuccessful.

Following the initial review of the application (Task ID #2187), The Division recommended additional groundwater baseline monitoring in Spring Canyon and Little Spring Canyon, and additional operational monitoring in Bear Canyon. The Permittee has responded (Task ID #2289) with the addition of baseline monitoring of one spring in Spring Canyon (SP-102) and one spring in Little Spring Canyon (SP-101). The Division believes that these are good choices to represent groundwater conditions in these canyons because they appear to have good flow, access, and minimal cover (although the overburden is approximately 2,500 ft at the canyon bottoms). The PHC should be updated with the baseline data once established to aid in a more complete determination of probable impacts due to the mining and to make a finding on whether to include the springs for operational monitoring. Although there is a water right for Mels Spring in Bear Canyon (Water Right 91-4513), the spring could not be located in the spring of 2005 after two site visits. No other major springs are known in the right fork of Bear Canyon, therefore, no spring monitoring sites have been added to the monitoring plan for this canyon.

Table 7-1 has been updated to reflect that the new spring monitoring site (SP-101 and SP-102) will be monitored for baseline data (Task ID #2318).

Surface Water Monitoring

The application meets the hydrology Environmental Description for Surface-Water Monitoring Plan as provided in **R645-301-724.200**. The surface-water monitoring plan has been updated to include additional sites for State Leases ML-47711 and ML-49287. Following the initial review of the application (Task ID #2187), The Division recommended additional surface-water monitoring in Spring Canyon, Little Spring Canyon, and Bear Canyon. The Permittee has

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responded (Task ID #2289) with the addition of three new operational monitoring stations in Bear Canyon (ST-11, ST-12, and ST-13) and one baseline monitoring station for Spring Canyon Creek downstream of the confluence with Little Spring Canyon (ST-15). The existing monitoring station for Bear Canyon Creek (ST-4) has been replaced by station ST-13 located closer to the permit boundary. The PHC should be updated with the baseline data from ST-15 once established to aid in a more complete determination of probable impacts due to the mining and to make a finding on whether to include the stream for operational monitoring.

Table 7-1 has been updated to reflect that the monitoring schedules for ST-11 and ST-12, that monitoring site ST-15 will be monitored for baseline data, and that ST-4 has been replaced with ST-13 (Task ID #2318).

Diversions: Perennial and Intermittent Streams

No diversions of perennial and intermittent streams are proposed for the additional State Leases ML-47711 and ML-49287. No new disturbed surface areas are proposed for the additional lease areas.

Stream Buffer Zones

The application meets the hydrology Operational Plan for Stream Buffer Zones as provided in **R645-301-731.600**. No surface mining within 100 feet of a perennial or intermittent stream is proposed for the additional State Leases ML-47711 and ML-49287.

Findings:

The information provided meets the minimum hydrology requirements of the Hydrologic Information of the Operation Plan of the State regulations.

RECLAMATION PLAN

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Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

The application meets the Reclamation Plan for the Hydrologic Reclamation Plan as provided in **R645-301-731.600**. No update to the existing hydrologic reclamation plan was submitted because no new surface disturbance is planned for the 5 additional State Leases ML-47711 and ML-49287.

Findings:

The information provided meets the minimum hydrology requirements for the Reclamation Plan of the State regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-729.

Analysis:

The application meets the requirements of the Cumulative Hydrologic Impact Assessment (CHIA) as provided in **R645-301-729**. The Division needs to update the Book Cliffs Area – III, CHIA to incorporate the additional State Leases ML-47711 and ML-49287. The hydrologic information provided in the application is adequate to update the CHIA.

Findings:

The information provided meets the minimum hydrology requirements for the Cumulative Hydrologic Impact Assessment Information of the State regulations.

RECOMMENDATIONS:

Hydrologic information provided in the application meets the requirements of the Coal Mining Rules. The proposed amendment should be approved.